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# **. DEPARTMENT OF AGRICULTURE**

## **ESTICIDE DATA PROGRAM**

### **PROGRESS REPORT**



April 1994

Public concern has grown over the past few years about the effects of agricultural pesticides on human health and environmental quality. Chemical residues on domestic and imported food have been of particular interest.

Recognizing the need to improve the quality and quantity of information available on chemical residues, the Pesticide Data Program (PDP) was proposed as part of USDA's fiscal year 1991 budget. Funding was approved by Congress in January 1991.

PDP provides actual pesticide residue and use data to help form the basis for conducting realistic dietary risk assessments and setting pesticide tolerances, assists the Environmental Protection Agency (EPA) in addressing pesticide reregistration issues, and provides a database for agencies to use in responding more quickly and effectively to food safety issues.

PDP coordination is multi-departmental with planning, policy, and procedural efforts coordinated among USDA, the Food and Drug Administration (FDA), and the Environmental Protection Agency. To provide oversight and direction for PDP, USDA signed a Memorandum of Understanding (MOU) with EPA and FDA to establish an Executive Steering Committee.

- EPA**
- . Provides USDA with commodities and pesticides for data collection;
  - . Receives residue data from USDA, FDA, States, and private sources to support pesticide reregistration and special review decisions;
  - . Receives pesticide usage data from USDA, States, and other sources; and
  - . Receives food consumption data from USDA.
- USDA**
- . Collects data on agricultural chemical usage;
  - . Collects pesticide residue data through cooperative efforts with nine participating States;
  - . Provides EPA with actual pesticide residue information on commodities to be used in risk assessment studies for reregistration and special review;
  - . Produces residue and usage data for EPA, FDA, and the public; and
  - . Provides EPA and FDA with consumption data on foods and commodities.
  - . Provides agricultural pesticide practice alternatives.
- FDA**
- . Shares residue data-recording information and commodity coding systems, and commodity preparation information with USDA;
  - . Collects residue data to enforce EPA-established tolerances and FDA administrative guidelines for food products; and conducts total diet surveys in selected cities.



## USDA Structure

Instead of creating a new organization to implement the Pesticide Data Program, USDA charged four of its agencies with identifying their respective expertise and needs, then melded them into a comprehensive program. The four USDA agencies are the Agricultural Marketing Service (AMS), the National Agricultural Statistics Service (NASS), the Economic Research Service (ERS), and the Human Nutrition Information Service (HNIS). AMS was selected as the lead agency in coordinating and implementing the various facets of the residue program.

The Pesticide Data Program was developed in stages, so that the integrity of data was not compromised. By taking this approach, the four USDA agencies were able to ensure that the system was reliable, and communication channels were in place before expanding the program to generate residue data on additional chemicals and crops.

## Agency Responsibilities

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|-------------|--|
| <b>AMS</b>  | <ul style="list-style-type: none"><li>. Coordinates activities of all USDA agencies and cooperating State agencies;</li><li>. Coordinates pesticide residue sampling and testing procedures; and</li><li>. Maintains an automated information management system for pesticide residue data.</li></ul>  |
| <b>NASS</b> | <ul style="list-style-type: none"><li>. Develops and provides statistically reliable State-level agricultural chemical usage data on food crops, and collects economic input data that link chemical usage with economic characteristics.</li></ul>  |
| <b>ERS</b>  | <ul style="list-style-type: none"><li>. Analyzes NASS and AMS data to determine the impact various regulations and production practices might have on U.S. agricultural production, the nation's food supply, and consumers; and</li><li>. Assesses economic implications of alternative pest control policies and practices on producers, marketers, and consumers.</li></ul>   |
| <b>HNIS</b> | <ul style="list-style-type: none"><li>. Conducts nationwide surveys of food used by households and food intake by individuals. This includes collection of data on multiple days of food intake and food intake per eating occasion which makes it possible to estimate both acute and chronic exposures to pesticide residues; and</li><li>. Is developing a Food Grouping System to translate data on foods as consumed into forms that can be linked with pesticide residue data. This system will provide intake data on food and commodities for EPA and other organizations to determine potential residue exposures for the total population and population sub-groups.</li></ul> |

## State Cooperation

Initially, AMS developed cooperative agreements with six states -- California, Florida, Michigan, New York, Texas, and Washington -- to collect and analyze fresh produce for determining pesticide residues. These States were selected because of their interest in pesticide residue data, laboratory facilities, technical expertise, regional diversity, and substantial produce production. To increase regional diversity and national representation, Colorado, North Carolina, and Ohio were added to PDP in January 1993. These nine States, plus neighboring States directly receiving produce at the consumer level, represent more than 50 percent of the Nation's population and will provide the basis for national inferences from the residue data.



## Scope

In 1994, AMS designated 45 pesticides of interest to EPA for laboratory analyses on selected commodities being tested for pesticide residues. However, analytical procedures currently employed have detected and reported more than 60 pesticide residues. Capability exists to detect additional compounds, as evidenced by new pesticide findings each month.

In May 1991, AMS selected three commodities for sampling -- grapes, lettuce, and potatoes. Oranges, grapefruit, bananas, and apples were added by the end of FY 1991. Celery and peaches were added in mid-FY 1992. In October 1992, carrots and broccoli were added. AMS deleted grapefruit at the end of 1993 and celery at the end of March 1994. Canned and frozen sweet corn and peas were added in April 1994, for a total of 12 commodities in PDP.

## Complexity

The PDP is designed to detect, verify, and report low level concentrations of pesticides in commodities. The program also provides data on actual pesticide residues near the consumer level and the edible portion of the product is sampled to emulate consumer practices. Residue data, coupled with toxicology and food consumption data, can then be evaluated as part of the EPA pesticide risk assessment process. A quality residue database requires standard sampling and uniform laboratory procedures, and an effective quality assurance program based on EPA's Good Laboratory Practices. To accomplish this, state-of-the art, standardized instrumentation was installed in cooperating State and Federal laboratories.

## Current Status

### AMS

- . Results from AMS' 1991 pesticide residue data program were published in March 1992. In July 1993, a summary of the data from January-June 1992 was published. In April 1994, the 1992 calendar year summary was released.
- . AMS developed an automated information management system to meet the present needs of PDP and used it to develop the 1992 summaries. Based on an MOU with USDA's NASS, a statistically defensible sampling system was implemented in January 1993, based on "proportionate to site size sampling". NASS will provide estimation strategies and inferences from the residue data.
- . Pesticide analyses are being performed on 12 commodities for organochlorine, organophosphate, organonitrogen, and N-methyl carbamate classes of pesticides. In addition, PDP conducts specific analyses for abamectin, benomyl, 2,4-D, formetanate, and propargite in selected commodities. Benomyl and selected 2,4-D analyses are conducted under an MOU with the Animal and Plant Health Inspection Service (APHIS) Laboratory in Gulfport, Mississippi. Formetanate and abamectin analyses are conducted by the AMS Eastern Laboratory in Gastonia, North Carolina.

### NASS

- . The three most recent surveys published by NASS in conjunction with PDP activities include: 1) Fruit and Nuts Chemical Use Survey in 14 Major Producing States for 1991 Crop Year -- published June 1992; 2) Vegetable Chemical Use Survey in 14 Major Producing States for 1992 Crop year -- published June 1993; and 3) Fruit Chemical Use Survey in Nine Major Producing States for 1993 Crop Year -- to be published June 1994.





## HNIS

- . In January 1994, HNIS began "Continuing Survey of Food Intakes by Individuals (CSFII) 1994-96" the third in a series of surveys. This survey will collect two independent days of food intake data from about 15,000 individuals over three years; larger numbers in some age categories, especially young children, teens, and the elderly. In response to the National Academy of Sciences report, "Pesticides in the Diets of Infants and Children," HNIS' request for additional funds to conduct a special study of children's food intakes went forward in the President's 1995 budget.
- . The HNIS Food Grouping System (FGS), a food data relational management system, is used to group CSFII data by foods, ingredients, and agricultural commodities. FGS data sets can be linked with pesticide residue databases to support pesticide exposure research. HNIS has completed preliminary mapping of prime ingredients (from CSFII 1989-91 food intake data) to the EPA dietary Residue Evaluation System items. HNIS will continue to work with EPA to complete the final commodity intake data set.

## Future Actions

Contingent on future funding, PDP will amend the commodities tested to further meet EPA's risk assessment needs and to respond to the National Academy Report entitled, "Pesticides in the Diets of Infants and Children." In February 1994, the PDP Executive Steering Committee agreed to the commodity and pesticide requests. The additional commodity requests are: wheat, soybeans, corn, and milk. All of these commodities have high consumption among infants and children.

ERS will publish two studies utilizing PDP data. The first will address sources and incidence of pesticide residues in fruit and vegetable consumption, including links between residues and use. The second will examine the adoption of integrated Pest Management by fruit and vegetable growers and its influence on pesticide use.

PDP already includes seven commodities with high consumption among infants and children -- apples, bananas, carrots, grapes, oranges, peaches, and potatoes. With the addition of sweet corn and peas, the total will be 9 of 12 commodities. Inclusion of grain and dairy commodities requires a modification in the sampling structure based on product marketing. EPA has provided separate pesticide residue testing profiles for these commodities. AMS is working with the Federal Grain Inspection Service on a sampling and pesticide residue testing system for wheat to be implemented in January 1995. Milk will be considered for FY 1996.

## Summary

The Pesticide Data Program is designed to meet the data quality and statistically-defensible criteria required for dietary risk assessment studies. PDP has: (1) Provided residue analyses for additional pesticides requested by EPA (especially for compounds requiring individual testing methods); (2) Added diversity in the types of commodities tested; (3) Responded to issues confronting the Government that involve the quality and scope of pesticide residue data and program structure to meet risk assessment data needs; and (4) Adapted to meet the needs of users of the residue database. USDA is confident that this program is generating the data needed for making decisions on food safety issues and addressing public perceptions concerning the safety of the Nation's food supply.